

**ABSTRACT**

An improved circuit inspection system incorporates an automated measuring technique that accounts for acceptable Z-axis elevation variance across both a printed-circuit device and a mounting surface when making solder-joint pass/fail decisions.

- 5 The improved solder-joint inspection system applies a near neighbor solder joint diameter error analysis for each solder joint on a printed-circuit device. A near neighbor solder joint diameter error outlier analysis is used to identify solder joint defects with improved accuracy.